

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Claims 19-42 in the reply filed on September 03, 2009 is acknowledged.
2. Claim 43 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention/ apparatus, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 03, 2009.
3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Response to Arguments

4. Applicant's amendments, except as to Claim 42, have rendered moot the rejections under 35 U.S.C. 112, second paragraph. The rejection under 35 U.S.C. 112, second paragraph has been withdrawn.
5. Applicant has not amended Claim 42 to overcome the rejection under 35 U.S.C. 101. The rejection under 35 U.S.C. 101 of January 09, 2009 is therefore maintained.
6. Applicant's arguments with respect to the claims under 35 U.S.C. 102 and 103 have been considered but are moot in view of the new ground(s) of rejection necessitated by claim amendments.

7. Claims 24-28 and 30-34 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 23 is apparently incorporated into Claim 19 and Claims 24-28 and 30-34 are examined as if they had been amended to depend from Claim 19.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 42 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 42 provides for the use of individual filaments, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claim 42 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102/103

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 41 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Montsinger (WO 02/076706).

Claim 41 is a product-by-process claim to a thread produced by the method taught by US'355, wherein the limitations of the product are fully met by the reference (col. 3, lines 23-29; Example 1, col. 6, lines 59-68).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of

a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In *re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 19, 20, 24-28, and 31-34, 36-39, 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706) in view of Staheli (US 6,838,123), and further in view of Rhodes, Jr. et al. (US 5,326,524).

Regarding Claim 19, Montsinger (WO'706) teaches a method of producing compressed, plastic-coated fibers or rovings (p. 2, lines 24-29), consisting of substantially parallel ("unidirectionally aligned fibers") (p. 10, lines 13-19; Fig. 9, elements 12), comprising the steps of coating rovings with plastic in a coating device, then passing the coated rovings, or a plurality of coated rovings as a composite, consisting of substantially parallel filaments on which the plastic applied is present in a molten or liquid state, through a rotating device by means of which local rotation of the fibers is executed which twists the individual threads with one another in the form of rotations (p. 3, lines 11-12; p. 7 line 21 to p. 8, line 22; Fig. 3, 6, and 9, elements "Fiber," 12, 23, "Strand"). The rotation of the filaments by a rotating sizing die ("exit die") (Abstract; p. 6, lines 15-32) causes the threads to rotate backwards along the threads in the direction of the coating device (p. 7, line 32 to p. 8, line 3; Fig. 3, elements 12, and 15, 22); the rotating exit die sizes the filaments - i.e., regulates the amount of polymer that is pulled out of a die by the fiber, thereby sizing the fibers or rovings (p. 6, lines 17-18). The rovings are compressed (page 8, lines 18-21).

WO'706 is silent as to a fluidized bed bath. Saheli (US'123) teaches a method for coating fibers as fiber strands by applying a powder in a fluidized bed bath (Abstract;

col. 2, lines 14-21; col. 3, lines 12-20; col. 4, line 64 to col. 5, line 11). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of WO'706 with a step of coating the fibers in a dry coating method in a fluidized-bed bath, because US'123 teaches that the step allows coating constituents to be applied directly without previous compounding and dissociation of individual constituents is avoided (Abstract).

WO'706 further teaches that the polymer coating of the fiber is in a heated liquid state; WO'706 in view of US'123 is silent as to whether the sizing die is a heated die to at least the melting point of the fiber coating (p.6, lines 10-32). Rhodes, Jr. et al. (US'524) teaches a method for making plastic rods reinforced with fiber rovings by rotating the fiber rovings before entering a heated die (col. 6, lines 51-62). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of WO'706 in view of US'123 by heating the sizing die, because US'524 teaches that heated dies are suitable for coating rovings, and such person would have recognized the benefit of maintaining the fiber coating at its melting point to improve the flow of the fiber coating through the die and onto the fiber.

Regarding Claim 24, WO'706 teaches that rotational speeds may vary from 0 to 10,000 rpm (p. 8, lines 6-7). WO'706 fails to teach that the high speed will spin off all excess coating material at the die edge. It would have been obvious to a person of ordinary skill in the art at the time of invention to spin the die at a sufficiently high rotational speed to spin off all excess material at the die edge in order to prevent

clogging of the die, promote uniform coating, to allow collection and recycling of coating material, and to maintain a clean die.

Regarding Claim 25, WO'706 teaches the step of rotating the exit die about the axis of the filaments and/or rotating the fiber within the exit die, and apparently discloses a rotating sizing die fixed in a hollow shaft and rotated together with the hollow shaft (Fig. 3, 6, elements 22, 23, 24, 32; p. 6, line 25 to page 7, line 25).

Regarding Claims 26-28, WO'706 teaches that rotational speeds may vary from 0 to 10,000 rpm (p. 8, lines 6-7).

Regarding Claims 20 and 31-34, WO'706 teaches that the rotating exit die sizes the fiber (col. 6, lines 17-18). Further, the length/diameter ratio of the die may be varied from 0.01 to 1000 (p. 6, lines 31-32). WO'706 provides trial summary data in Table 1 with trial die diameters from 0.136 inches to 0.25 inches. WO'706 fails to teach the specific diameters recited in the claims. The internal diameter of the sizing die and the size of the threads are result-effective variable, because the diameter of the die is known in the prior art to affect the diameter of the resulting fibers and the size of the fiber to affect the final product. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify US'706 by determining optimal dimensions as a result of routine optimization.

Regarding Claim 36, WO'706 suggests that after leaving the rotating device, the roving consists of substantially parallel filaments (Figs. 6 and 9).

Regarding Claim 37, WO'706 teaches producing rovings of glass, carbon, metal, and/ or organic filaments (Claim 26).

Regarding Claim 38, the combination of references fails to teach that the thermoplastic material has a softening point of 100 degrees Celsius or higher. The softening point of a thermoplastic material is a result-effective variable, because the at the time of the invention the person of ordinary skill in the art would have recognized that the softening point will affect the ability of the roving to withstand thermal and mechanical stresses. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of the combination of references by determining the optimal thermoplastic material as a result of routine optimization.

Regarding Claim 39, WO'706 fails to teach the recited plastics. Staheli (US'123) teaches coating rovings with curable polycondensates and polyadducts (col. 3, lines 32-40). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify WO'706 by using a thermosetting plastics as taught by US'123, because US'123 teaches that thermosets are useful to give the rovings excellent mechanical properties (Abstract; Examples 1 and 2, col. 5, line 65 to col. 6, line 41).

The combination of references fails to teach a method wherein the fibers are coated with at least one thermosetting polycondensate and at least one thermosetting polyadduct. However, it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.

19. Claims 22 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706) in view of Staheli (US 6,838,123) and Rhodes, Jr. et

al. (US 5,326,524) as applied to Claim 19 above, and further in view of Tsotsis (US 6,074,716).

Regarding Claims 22 and 40, WO'706 teaches producing rovings of glass, carbon, metal, and/ or organic filaments (Claim 26). WO'706 is silent as to coating the additional mineral powders or metal powders. US'123 teaches an aftercoating operation in order to double the filament weights by adding mineral content (col. 5, lines 1-5). The combination of references is silent as to coating the rovings with a material selected from the group consisting of mineral powders [and] metal powders. Tsotsis (US'716) teaches a metal matrix impregnated tow composite material in which a roving of fibers is impregnated with metal powder (col. 2, lines 63-67). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of the combination of references by impregnating the molten coating plastic with metal powder, because US'716 teaches that metal powder lends a roving high mechanical and thermal properties and resistance to solvents (col. 2, lines 3-18).

Further regarding Claim 40, the combination of references fails to teach the average particle size of the metal powder. The particle size of metal powder is a result-effective variable, because it affects the packing density and thus the mechanical and solvent resistant properties of the roving. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of the combination of references by determining the optimum particle size as a result of routine optimization.

20. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706) in view of Staheli (US 6,838,123) and Rhodes, Jr. et al. (US 5,326,524) as applied to Claim 19 above, and further in view of Schmidt et al. (US 2005/0051924).

US'706 teaches using a plurality of dies in parallel, but does not teach connecting a plurality of rotating sizing dies in series. The combination of references is silent as to a series of rotating sizing dies. Schmidt et al. (US'924) teaches a process of making extruded knit materials in a continuous manner by extruding three or more polymeric filaments into a functional knit material for bale wrap, cargo wrap and nets (Abstract). US'924 teaches that the rotary die assembly in series allows the extruded filaments to become intermingled and interlocked (Abstract). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of the combination of references by substituting the rotary die assembly connected in series taught by US'924 for the parallel die assembly of US'706 to yield predictable results, because US'924 teaches that such an assembly is suitable to extrude continuous filaments of polymers such as those used in the process of US'924 and to vary the cross section of continuously extruded filaments (pars. 0033, 0034).

21. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706) in view of Staheli (US 6,838,123) and Rhodes, Jr. et al. (US 5,326,524) as applied to Claim 19 above, and further in view of Eaton et al. (WO 02/087840).

Regarding Claim 35, the combination of references is silent as to the number of spiral revolutions. WO'840 teaches that a roving may 45-47 spiral revolutions ("turns" or "twists") per meter. Examiner believes that the limitation that the spiral revolutions will inherently occur backward in the direction of the coating device, because of the angular stress or torsion placed on the roving. It would have been obvious to a person of ordinary skill in the art at the time of invention to practice the process of the combination of references by twisting the roving in the recited number of spiral revolutions because WO'840 suggests that the a number of twists within the range of revolutions is adequate for certain applications as a matter of design choice and can be obtained with a reasonable expectation of success.

Additionally, it is the Examiner's opinion that the resultant filaments will be inherently compressed by the torsion on the threads while twisting or rotating, as evidenced by Montsinger (WO 02/076706) at page 8, lines 18-21.

Conclusion

22. No Claim is allowed.
23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER WEDDLE whose telephone number is (571) 270-5346. The examiner can normally be reached on Monday-Thursday, 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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